

## Poultry Solar Cell Pilot Project



Presentation to the  
Science & Technology Council

December 12, 2006

## Project Goals

- To determine the economics of installing, operating, and maintaining photovoltaic cells as sources of power for poultry houses
- To guide and define legislation that may be necessary to make this technology practical and viable

## Project Participants

### University of Delaware

- Delaware Biotechnology Institute
- College of Agriculture and Natural Resources
- Center for Energy and Environmental Policy

### Government

- DE Department of Agriculture
- DE Department of Natural Resources and Environmental Control
- DE General Assembly
- USDA Rural Development

### Industry

- Delaware Technology Park
- WorldWater & Power Corporation
- GE Solar
- Allen Family Foods, Allen's Hatchery



### Poultry in Delaware

- 2500 chicken houses
- 25,000 chickens per house
- 62,500,000 chickens on the ground if all houses are full
- Five grow-outs per house per year
- 312,500,000 chickens raised per year in DE

### System Design

- 42 kW solar power system, including data acquisition and monitoring equipment
- Ground mounted
- One of 5 poultry houses at the Allen Farm on Portsville Road in Laurel will be used for the project
- Two separate systems will be installed
  - » Net metering system
  - » Demand management system

### Relevant Legislation

- Delaware Green Energy Fund
- Federal Investment Tax Credit in the Energy Policy Act of 2005

### Relevant Legislation

- Delaware Green Energy Fund
  - » 50% of the cost of the system will be rebated, up to \$250,000
  - » Equipment must be installed in Delaware
  - » In Delaware, only DP&L customers are eligible for the rebate
  - » Poultry facilities are considered non-residential
  - » Purchaser may request that the rebate be paid directly to retailer or installing contractor



### Relevant Legislation

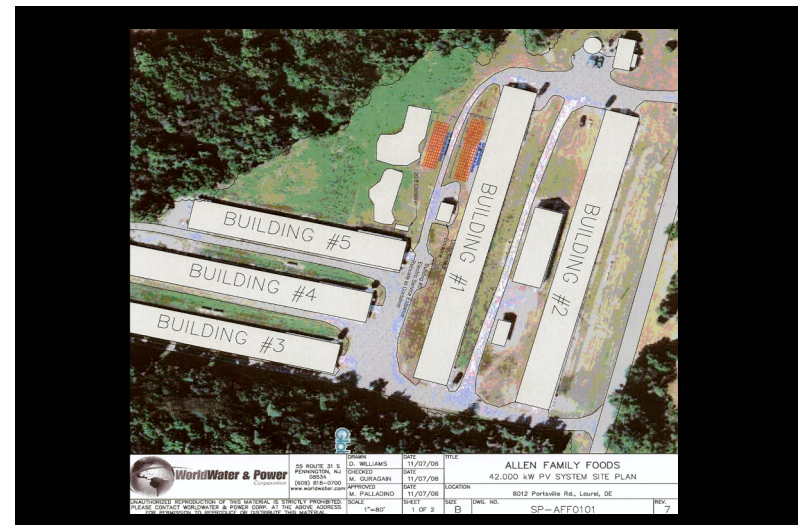
- Federal Investment Tax Credit
  - » Dollar-for dollar reduction of an entity's tax burden
  - » 30% of eligible property put in service in 2006 or 2007; thereafter the credit will be 10%
  - » In general, equipment must be new
  - » Tax credit is claimed the year the equipment is put into service

### Relevant Legislation

- Federal Investment Tax Credit
  - » State rebates, grants, buy-downs, other incentives, RECs, and other taxes paid do not decrease the amount eligible for this tax credit if federal income tax is paid on these incentives
  - » Tax depreciation is separate from tax credit, BUT
  - » Tax depreciation claimed must be reduced by 50% of the federal tax credit

## Renewable Energy Credits (RECs)

- Energy distribution managers for the Northeast grid (PJM) will certify the system as a green energy generator
- Allen's will accrue RECs
- WorldWater & Power will assist with contracting for the sale of RECs derived from this project for five years





### Project Monitoring Plan

- Electrical production of the photovoltaic system
  - » Fat Spaniel will measure electrical production; i.e., AC current, voltage, power generated, and cumulative power generated
  - » Fat Spaniel will collect weather data; i.e., ambient air temperature, wind speed and direction, and solar irradiation ( $\text{W/m}^2$ )
  - » Real-time data can be accessed via the web
  - » UD will install a Campbell Scientific weather station to provide redundancy of weather data
  - » UD will provide internet connectivity

### Project Monitoring Plan

- Energy use by the poultry house
- Electricity generated by the photovoltaic system
- Electricity drawn from the utility
- Combined net effects of both net metering and demand management

### Project Funding

- Allen's will own the system, which will cost \$500,000
  - » Allen's will assign the Green Energy Fund rebate (\$250,000) to WWP
  - » Allen's will make scheduled payments to WWP totaling \$250,000

### Project Funding

- Allen's will get a 30% investment tax credit, which will total \$150,000
- Allen's will save money on its DP&L bill
- Allen's can take advantage of accelerated depreciation of the system, and this is estimated to be \$154,000 as a tax credit over 5 years

### Project Funding

- Allen's will pay tax on the Green Energy Fund rebate and other monies it receives related to the project
- Allen's will invoice UD for use of the facility, equipment, and personnel to oversee the project at the site

### Role of the Science and Technology Council

- Continue to support and promote this project
- Begin to guide and craft legislation to make this technology economical

## Summary

- Project cooperators are committed
- Project funding is in place (except for the USDA Rural Development grant)

